Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:	)	
	)	RM No. 10800
Amendment of Part 25 of the Commission's Rules To Adopt Licensing and Service Rules for Aeronautical Mobile-Satellite Service ("AMSS") Operations in the Ku-Band	)	

To: The Commission

REPLY COMMENTS OF THE BOEING COMPANY

The Boeing Company ("Boeing"), by its attorneys, hereby files these brief reply comments in the above-captioned proceeding.[1] Significantly, all parties that commented on Boeing's petition support the initiation of a rulemaking proceeding to develop licensing and service rules for Aeronautical Mobile-Satellite Service ("AMSS") operations in the Ku-band.[2] Given the unanimous support to commence an AMSS rulemaking, the Commission should issue at the earliest practicable time a notice of proposed rulemaking based on the petition and comments filed in this proceeding.

After comments were filed in this proceeding, the Commission adopted its *Above 28 MHz Report and Order*, which allocated the 14.0-14.5 GHz band to the Mobile-Satellite Service

[1] *See Petition for Rulemaking*, Amendment of Parts 2 and 25 of the Commission's Rules To Allocate Spectrum in the 14-14.5 GHz Band to the Aeronautical Mobile-Satellite Service ("AMSS") and To Adopt Licensing Rules for AMSS Operations in the Ku-Band, filed by The Boeing Company (July 21, 2003); *see also Public Notice,* Consumer & Governmental Affairs Bureau, Reference Information Center, Report No. 2632 (Oct. 2, 2003).

[2] *See* Comments of Aeronautical Radio, Inc., RM-10800 (filed Nov. 3, 2003); Comments of The Boeing Company, RM-10800 (filed Nov. 3, 2003); Comments of PanAmSat Corporation, RM-10800 (filed Nov. 3, 2003); Comments of Rockwell Collins, Inc., RM-10800 (filed Nov. 14, 2003).

("MSS"), including AMSS, on a secondary basis.[3] This new allocation implements domestically the international AMSS allocation approved at WRC-03. The prompt adoption of AMSS licensing and service rules will facilitate continued development and expansion of innovative broadband communications services in the United States and will ensure that U.S. consumers enjoy the benefits of these important new services, while fully protecting other authorized users of the Ku-band.

With respect to issues raised by commenters in this proceeding, PanAmSat suggests that AMSS aircraft earth stations ("AESs") "operating on a *secondary* basis" should not be entitled to routine processing unless they conform to the minimum antenna size and antenna gain pattern applicable to routinely processed Fixed-Satellite Service ("FSS") earth stations "operating on a *primary* basis."[4] However, it is precisely because FSS earth stations operate on a primary basis, and thus are entitled to protection from harmful interference, that the Commission imposes minimum antenna size and gain pattern requirements for routine processing -- these parameters specify the vulnerability of an earth station's receive operations to potential interference. Indeed, Section 25.209(c) of the Commission's rules explicitly states that primary FSS users are protected only to the degree to which harmful interference would not be caused to an antenna that conforms to the antenna gain pattern set forth in Section 25.209(a).[5] Thus, the Commission

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[3] *See* Amendment of Parts 2, 25, and 87 of the Commission's Rules to Implement Decisions from World Radiocommunication Conferences Concerning Frequency Bands Between 28 MHz and 36 GHz and to Otherwise Update the Rules in this Frequency Range, ET Docket No. 02-305, FCC 03-269 (rel. Nov. 4, 2003) at ¶¶ 72-78 and App. B ("*Above 28 MHz Report and Order*").

[4] *See* Comments of PanAmSat Corporation at 2 (emphasis in original).

[5] *See* 47 C.F.R. §25.209(c). If such parameters were not specified, then earth stations with smaller or non-conforming antennas effectively would have to receive a greater level of protection than other co-primary earth stations with compliant antennas.

has recognized that the primary purpose of specifying the gain characteristics of FSS earth station antennas is to define the protection they receive as a primary service. In contrast, AMSS receive operations are conducted in the 11.7-12.2 GHz band on an unprotected basis only and, by definition, cannot claim protection from other conforming users of the band. Accordingly, earth station parameters designed to provide interference protection are irrelevant to Ku-band AES receive operations, and it is illogical to suggest that AMSS service rules must specify the gain characteristics of AMSS antennas.

PanAmSat next argues that the Commission should develop AMSS power limits on a cases-by-case basis, rather than adopting by rule an aggregate off-axis e.i.r.p. limit for AMSS systems equivalent to that of a routinely licensed VSAT station.[6] PanAmSat apparently seeks to reopen the debate on power limits in the context of each and every AMSS licensing proceeding (including applications to add new AESs and additional satellite points of communication to previously licensed AMSS systems). The Commission, however, has already definitively answered the question of appropriate power limits for AMSS operations.

In December 2001, the Commission authorized Boeing to operate 800 transmit/receive AESs with phased array antennas in the Ku-band on a *non-harmful interference basis*.[7] The Commission recently modified Boeing's authorization to substitute 675 AESs with reflector antennas for a like number of AESs with phased array antennas.[8] In authorizing the transmit operations of the Connexion by Boeing[SM] system, the Commission concluded that Ku-band

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[6] *See* Comments of PanAmSat Corporation at 2.

[7] *See The Boeing Company,* Order and Authorization, 16 FCC Rcd. 22645 (Int'l Bur./OET 2001) ("*Transmit/Receive Authorization*").

[8] *See* Radio Station Authorization, Call Sign E000723, File No. SES-MOD-20030512-00639 (granted Nov. 14, 2003).

AMSS operations would not cause harmful interference into primary GSO FSS operations so long as the aggregate off-axis e.i.r.p levels of AES uplink operations along the GSO arc are maintained below the level produced by routinely processed VSAT earth stations pursuant to Sections 25.134 and 25.209 of the Commission's Rules.[9] Thus, the Commission has already concluded that the routinely licensed VSAT limits are appropriate for Ku-band AMSS operations in order to protect other GSO FSS operations, even on a non-conforming use basis.

This is precisely the same approach adopted by the Commission more than a decade earlier when, in 1989, it authorized Qualcomm, Inc. to operate OmniTRACS land mobile-satellite earth stations on a secondary basis in the Ku-band.[10] Thus, for systems operating on both a non-harmful interference and a secondary basis, the Commission has uniformly applied the same power limit proposed by Boeing in its AMSS service rules -- compliance with an aggregate off-axis e.i.r.p. limit equivalent to that of a routinely licensed VSAT earth station. Now that AMSS operations have the enhanced regulatory status of a secondary service in the 14.0-14.5 GHz band, the Commission can and should include an off-axis e.i.r.p. limit in its rules to ensure that AMSS operations do not cause harmful interference to Ku-band FSS systems.

The case-by-case approach proposed by PanAmSat also would waste the Commission's limited administrative resources. The fundamental purpose of adopting licensing and service rules is to regularize the licensing and operation of multiple AMSS systems pursuant to a uniform set of requirements. Establishing separate power limits for individual AMSS systems

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[9] *See generally Transmit/Receive Authorization.*

[10] Qualcomm, Inc., *Memorandum Opinion, Order and Authorization*, 4 FCC Rcd 1543 (1989) (authority to operate 20,000 OmniTRACS earth stations) (emphasis added); *see also* Qualcomm, Inc., *Order and Authorization,* 6 FCC Rcd 735 (1991) (authority to operate an additional 20,000 OmniTRACS earth stations on the same terms and conditions as set forth in the original license).

would undermine this objective, and would be contrary longstanding Commission precedent regarding appropriate power levels for secondary and non-conforming operations in the 14.0-14.5 GHz band.

Finally, as Boeing indicated in its separate comments on the AMSS application of Aeronautical Radio, Inc. ("ARINC"), the Commission should endeavor to establish a level regulatory playing field for all Ku-band AMSS systems.[11] Adopting and applying uniformly the AMSS licensing and service rules proposed in Boeing's petition for rulemaking -- which are based on internationally recognized standards for AMSS system design -- would enhance competition in AMSS services, while at the same time protecting other users of the Ku-band.

In view of the foregoing, and for all of the reasons set forth in its original petition for rulemaking and earlier comments, Boeing respectfully requests that the Commission promptly initiate a rulemaking proceeding to adopt licensing and service rules for AMSS operations in the Ku-band so that the benefits of this innovative broadband communications service can be realized more fully by air travelers in the United States and around the world.

Respectfully submitted,

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[11] *See generally* Comments of the Boeing Company, File No. SES-LIC-20030910-01261, Call Sign E030205 (filed Nov. 14, 2003).